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AN ANALYSIS OF DENTAL EMERGENCIES DURING COMBAT AND
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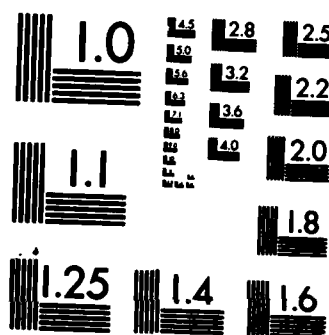
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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The objective of this study was to accumulate and evaluate data on the impact of dental emergencies during combat and peacetime exercises of the U. S. Army. Information has been collected from World War II, the Korean Conflict, the Vietnam War and three peacetime exercises. This information has been compared and contrasted where appropriate and conclusions drawn. Possible avenues of future research and development are included consequent to these conclusions.			

AN ANALYSIS OF DENTAL EMERGENCIES DURING COMBAT AND PEACETIME EXERCISES

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INTRODUCTION

The primary objective of the Army Dental Care System is to prevent loss of duty time caused by oral diseases and injuries and, in so doing, improve the effectiveness and the fighting strength of U.S. troops. In order to establish the magnitude of dental disease related manpower problems in the military, data on dental emergencies from World War II, the Korean Conflict, the Vietnam Conflict, as well as from various peacetime field operations have been examined. The report to follow represents a synopsis of these data and underscores the impact of dental diseases /emergencies on combat readiness. Data have been collected from several independent sources and trends have been noted and some valid statistical comparisons have been made. Recommendations have been presented to explore certain problem areas for possible remedies. These suggestions are made with the understanding that better dental health care can be provided to the soldier and the impact of dental emergencies on unit effectiveness can be minimized.

HISTORICAL PERSPECTIVE

According to Colonel George Jeffcott⁶ dental emergencies have been significant factors causing the loss of duty time among troops, and dental health support during combat has been considered important in maintaining troop morale. Dental emergencies, per se, were not recorded during World War II. Table I, however,

shows tabulations of three potential pathological processes which required bona fide emergency treatment: cellulitis, osteomyelitis, and Vincent's stomatitis (acute necrotizing ulcerative gingivitis-ANUG).⁶ The overseas prevalence of osteomyelitis remained fairly constant, while the prevalence of cellulitis reached a high in 1943 and trailed off to a low in 1945. The overseas prevalence of ANUG, however, followed an opposite course - with the fewest cases reported in 1942. The prevalence of these cases increased progressively to the highest level in 1945. Since predisposing factors such as nutritional deficiencies, poor oral hygiene, physical fatigue, and emotional stress have been associated with the development of Vincent's stomatitis, it is not surprising to note an increased prevalence among soldiers in prolonged combat. Unfortunately, the problems associated with accurate diagnosis of oral ulcerative necrotic diseases, render most data on ANUG invalid and of questionable significance.

COL Jeffcott also tabulated the total numbers of extractions and permanent fillings from 1942 to 1945 (Tables II). These data show that more than 12.5 million permanent restorations were placed by the U.S. Army Dental Service overseas and that over four times that number were placed by Army dentists in the U. S. From the data presented in Table III, it is apparent that the frequency of restorations performed in the U.S. increased dramatically from 1942 to 1943. The more expedient treatment (extrac-

tions) was used most frequently in 1942 during the rapid mobilization of troops. However, the frequency of extractions decreased markedly the following years. These trends of increased frequency of permanent restorations and decreased frequency of extractions point out the fact that dental requirements of the new inductees overwhelmed the available U. S. Army dental facilities in 1942. By 1943, according to Jeffcott, a sufficient number of dentists and facilities were available to meet the treatment requirements for the induction and mobilization of troops. One of the consequences of the improved dental treatment capability was the decreased frequency of extractions as a treatment. From the data (Table III), it is interesting to note that the frequency of permanent restorations and extractions overseas remained fairly constant throughout the war. Consequently, despite the increased capacity for dental treatment in the United States, dental problems persisted on the battlefield and extractions remained a primary mode of treatment.

DENTAL TREATMENT DURING THE KOREAN CONFLICT

Data on dental emergencies during the Korean Conflict are available only from the 1952 Annual Report of the Eighth U. S. Army in Korea and from a few scattered individual reports from various dental service activities in 1951 and 1952.² These reports consisted primarily of the dental classification of the personnel and a general breakdown of treatment rendered.

In the summary of treatment rendered by the dental service activities, restorations accounted for approximately forty-two per cent of all treatments and minor surgical procedures (primarily extractions) accounted for approximately twenty-three per cent of the treatments. Bridges, crowns, dentures, periodontal treatment, and major surgical procedures constituted the majority of the remaining treatments. Hence, as expected, two-thirds of the dental treatments rendered in Korea in 1952 consisted of routine restorations and extractions.

The status of the dental health of the Eighth U. S. Army in Korea in 1952 was reported by annually classifying the personnel at the various dental activities. The U. S. Army classification system for dental health status at that time was as follows:

CLASS 1 - Individual needs no dental work.

CLASS 2 - Individual needs preventive or corrective treatment.

CLASS 3 - Individual needs immediate treatment of advanced dental condition.

CLASS 4 - Individual needs essential prosthetic appliances.

CLASS 5 - Individual needs emergency treatment.

Because of the large number of soldiers in Korea who required dental care, first priority was given to those who were in pain and required emergency treatment (Class 5); second priority to those who needed essential prosthetic appliances (Class

4); and third priority to those whose dental conditions were likely to interfere with the full performance of duty (Class 3).²

Although an attempt was made in Korea to treat all personnel in Classes 3 to 5 before assignment to a combat unit, up to four per cent of replacement personnel required emergency treatment and about ten to fifteen per cent required early treatment of dental disease subsequent to unit assignment.²

INCIDENCE AND CAUSATIVE FACTORS OF DENTAL EMERGENCIES IN VIETNAM

Dental emergencies were significant "casualty" statistics to Field commanders in Vietnam. In a study conducted by Hutchins and Barton in 1966, the documented dental emergency rate ranged from 65.8 to 99.1 per 1000 per year.⁵ the highest incidence of emergencies occurred that year during the months of September, October, and November. Furthermore, ninety-five per cent of those patients who reported for emergency dental treatment were considered to have valid dental complaints. Malingering was not considered an important factor in the prevalence of these emergencies.

In 1968, MG Robert E. Shira, Chief of the Army Dental Corps, visited Vietnam and received reports from field commanders that combat effectiveness was being disrupted by dental emergencies which incapacitated "keymen" for as long as seven days. As a consequence of these reports, MG Shira appointed a task force to collect data on the treatment of different dental emergencies in

Vietnam (Table IV). The initial portion of that survey lasted one month and showed an annual dental emergency rate that exceeded 142 per 1000 men.³ This statistic was indeed startling and subsequently, MG Shira initiated the Dental Combat Effectiveness Program in September 1968. This program established a screening system at all CONUS posts where combat training was being conducted. Dental screening examinations were required as part of out-processing for Vietnam and any previously overlooked dental pathoses were treated immediately.

The primary causes of dental emergencies in Vietnam in 1968 and 1969 were found to be caries and periodontal diseases. These findings parallel the 1966 study by Hutchins and Barton (Table V).⁵ The major treatments noted in the 1968-1969 data were restorations (thirty-nine per cent) and extractions (forty-four per cent).

MG Shira's task force divided the occurrence of dental emergencies and treatments during an average one-year tour in the Republic of Vietnam (RVN) into three time periods: first three months in country (MIC), second three MIC, and last six MIC. The data collected indicated that during the second three MIC, emergencies increased by fifty-nine per cent and the number of extractions increased by eighty-one per cent - when compared with the first three MIC. The data suggest that the dental health of the soldier in Vietnam deteriorated during the first three MIC.

IMPACT OF DENTAL EMERGENCIES DURING FIELD OPERATIONS

An analysis of dental casualties that occurred during peacetime exercises at Fort Irwin and Fort Drum in 1978 indicates that the rate of dental emergencies was high (167.33 per 1,000 troops per year).

The impact of potential dental emergencies on field operations was underscored in the Eniwetok after-action report on dental preparation of replacements (POR) for overseas movement.¹ This report dealt with the 1977-1980 clean-up operation at Eniwetok Atoll, M.I. and stated that dental emergencies created significant problems during the operation. At one time during this period the deployment of twenty-seven per cent of the individuals assigned to Eniwetok was delayed by the need for immediate dental treatment. When a dental emergency occurred during assignment to Eniwetok, the soldier was placed on temporary duty (TDY), air-evacuated to Honolulu (2,500 miles), and treated until an acceptable state of oral health was attained.¹

DISCUSSION

Despite the widespread use of fluorides and the improved dental delivery system in the U. S. Army, dental emergencies remain as a potential source of casualties. It is difficult to compare data collected in wartime and data collected during field exercises. However, after examining data from the Fort Irwin and Fort Drum exercises, it is evident that dental emergencies range

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between ten and twenty per cent of all medical patients presenting to field treatment facilities. This high rate could have a devastating effect upon a unit's effectiveness, especially during an intense conflict.

Studies examined during the preparation of this article indicate that many of these dental emergencies are preventable. For instance, Hutchins and Barton⁵ concluded in their 1966 Vietnam study that the majority of dental emergencies were valid, but could have been prevented if the soldier had received the necessary surgical and restorative treatment prior to deployment. Payne and Posey⁶ concluded that seventy-four per cent of all the dental emergencies during peacetime exercises were preventable.

CONCLUSION

Despite preventive dentistry programs, an annual recall program (Army Oral Health Maintenance Program), and improved dental care delivery, the potential for dental combat casualties remains high. The Dental Combat Effectiveness Program in 1968 was reactive to a deteriorating situation in Vietnam and could have been more effective if it had been incorporated into a sustained readiness program. Emphasis should be placed on insuring that annual dental examinations will result in treatment and preventive measures for soldiers who are likely to be deployed. Planning for mobilization should also include programs which will rapidly improve the oral health status of reserve forces and new accessions

to the Army. These groups, who are now not under a program of dental readiness at all, will probably make up the bulk of troops deployed to an area of operations.

MILITARY DISCLAIMER

The opinions expressed herein are those of the author(s) and are not to be construed as those of the Department of Defense or the U. S. Army Medical Department.

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TABLE I. INCIDENCE OF EMERGENCY TREATMENTS OVERSEAS DURING WWII⁶

NUMBER - PER 1,000 MEN PER YEAR

<u>EMERGENCY</u>	<u>1942</u>	<u>1943</u>	<u>1944</u>	<u>1945</u>	<u>AVERAGE (1941-1945)</u>
Cellulitis of Dental Origin	0.70	1.80	1.60	1.40	1.60
Osteomyelitis of Oral Structures	0.08	0.08	0.09	0.07	0.08
Vincent's Stomatitis	9.00	28	28	39	31

TABLE II. NUMBERS OF PERMANENT RESTORATIONS AND EXTRACTIONS DURING WWII⁶

<u>TREATMENT</u>	<u>1942</u>	<u>1943</u>	<u>1944</u>	<u>1945</u>	<u>TOTAL</u>
PERMANENT RESTORATIONS					
	7,122,475 ^a	20,898,379 ^a	19,306,933 ^a	8,065,957 ^a	55,393,744 ^a
	645,882 ^b	2,745,523 ^b	5,119,752 ^b	4,187,578 ^b	12,698,736 ^b
EXTRACTIONS					
	3,030,146 ^a	5,316,079 ^a	2,919,953 ^a	1,361,115 ^a	12,627,293 ^a
	216,764 ^b	691,579 ^b	922,835 ^b	731,465 ^b	2,562,643 ^b
^a U.S.					
^b Overseas					

TABLE III. INCIDENCES OF PERMANENT RESTORATIONS AND EXTRACTIONS DURING WWII⁶

NUMBER PER 1,000 MEN PER YEAR					
<u>TREATMENT</u>	<u>1942</u>	<u>1943</u>	<u>1944</u>	<u>1945</u>	<u>(1942-1945)</u>
Permanent Restorations	1580 ^a	4060 ^a	4860 ^a	4050 ^a	4000 ^a
	1030 ^b	1560 ^b	1290 ^b	1210 ^b	1290 ^b
Extractions					
	1099 ^a	1032 ^a	735 ^a	684 ^a	912 ^a
	347 ^b	393 ^b	233 ^b	212 ^b	262 ^b
^a U.S.					
^b Overseas					

TABLE IV. ANNUAL RATE FOR DENTAL EMERGENCIES IN VIETNAM. TASK FORCE DATA³

<u>MONTH</u>	<u>ANNUAL RATE</u>
JULY 1968	142 PER 1000 MEN
AUGUST 1968	81 PER 1000 MEN
SEPTEMBER 1968	82 PER 1000 MEN
NOVEMBER 1968	98 PER 1000 MEN
AUGUST 1969	73 PER 1000 MEN

MEAN = 95.2 + 27.7 PER 1000

MEDIAN = 82 PER 1000

TABLE V. CAUSES OF DENTAL EMERGENCIES IN VIETNAM AND PROLONGED
FIELD TRAINING EXERCISES

<u>CAUSE</u>	<u>Vietnam⁵ 1966</u>	<u>VIETNAM³ 1968/1969</u>	<u>FIELD EXERCISES 1978</u>
Caries	60%	74%	52%
Periodontal Disease	11%	12%	22%
Other/Unknown	29%	14%	26%

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